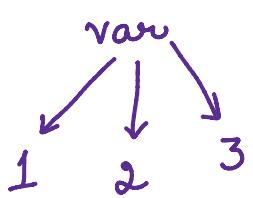


- Switch Statements
  - For Loop.
  - Break and Continue Statements

## Switch Statements



```
if (var == 1) {  
    ...  
}  
  
else if (var == 2) {  
    ...  
}  
  
else if (var == 3) {  
    ...  
}
```

switch (var) {  
case 1:  
=====  
case 2:  
=====  
case 3:  
=====  
}

A diagram illustrating the relationship between optional parameters and the else block. On the left, the word "optional" is written diagonally above a horizontal line. An arrow points from this line to the right, where the word "else" is written vertically next to a curly brace. Below "else" is another curly brace, and below that is an equals sign.

switch ( var-name ) {

case val1:

case val2:

default: ←

default:  $\equiv$

}

```
int a;  
switch (a) {
```

// case 1:  
cout << "P";

a = 3  
o/p: R

+ // case 2:  
cout << "Q";

a = 2:  
o/p: QR

+ + default:  
cout << "R";

a = 1:  
o/p: PQR

}

Fall through behavior:

whenever one case is matched,  
all the lines below it  
are executed.

"break" is required to come  
out of the switch block.

```
→ int a;  
switch (a) {
```

case 1:  
cout << "P";  
break;

a = 3:  
o/p: R

case 2:  
cout << "Q";

a = 2:  
o/p: Q

case 2:  
    cout << "Q";  
    break;  
default: cout << "R";

a = 2:  
op: Q  
a = 1:  
op: P

}

char ch;

switch (ch) {

case 'A':  
    cout << "Character entered is A";

case 'B':  
    cout << "Character entered is B";  
    break;

case 'C':  
    cout << "Character entered is C";  
    break;

}

\*  
ch = 'A': character entered is A  
              "              "      B

ch = 'a': No output

int a;

switch (a) {

case 1:

No error

a = 1: X  
a = 2: X

case 1:

case 2:

`cout << "X";`

`break;`

a = 2:

X

a = 3:

Y

a = 4:

Y

case 3:

case 4: `cout << "Y";`

`break;`

logical OR

}

`if (a == 1 || a == 2)`

`cout << "X";`

case 1:  
case 2: `cout << "X";`  
`break;`

Iterative Statements (Loops)

for

while

do while

[`cout << "Hello";`  
`cout << " "`

FOR Loop:

`for (initialisation; condition ; updation) {`

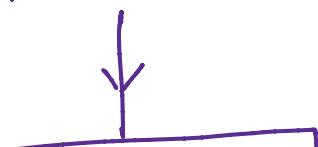
====

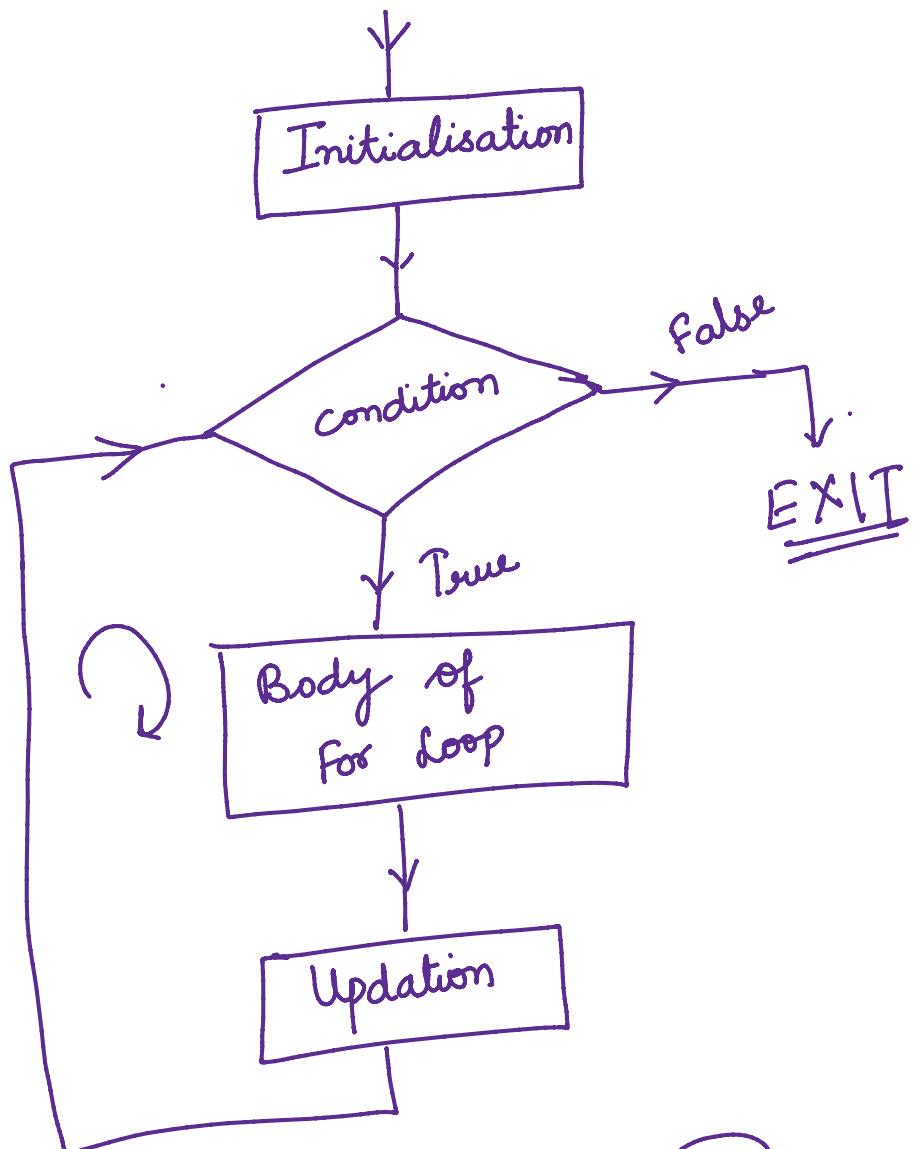
Body of for loop

FALSE EXIT

True

}





```

for (int i=1; i<5 ; i++) {
    cout << "Hello";
}
  
```

}

$i = 1:$      $\begin{array}{c} i < 5 \\ \underline{1 < 5} \end{array}$  TRUE  
 $\begin{array}{c} 2 < 5 \end{array}$  TRUE

Hello

$\begin{array}{c} i++ \\ i = 2 \end{array}$  ✓  
 $\begin{array}{c} i++ \\ i = 3 \end{array}$  ✓

Hello

$i < 5$  TRUE

Hello

$i++$   
 $i = 3$

$i < 5$  TRUE

Hello

$i++$   
 $i = 4$

$i < 5$  TRUE

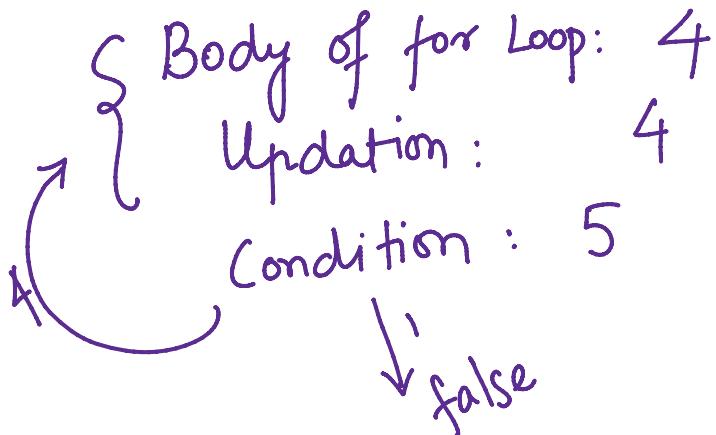
Hello

$i++$   
 $i = 5$

$i < 5$  FALSE

==

Initialisation : 1



```
for (int i=1; i<10; i++) {  
    cout << i;
```

3

O/p: 1 2 3 4 5 6 7 8 9

```
for (int i=1; i<10; i+=2) {  
    cout << i;
```

2

O/p: 1 3 5 7 9

}

O/p: 13579

$i=1: \frac{i < 10}{1 < 10}$

True:

Point 1

$i+=2$   
 $i=i+2$   
 $i=1+2$   
 $i=3$

$3 < 10$  True:

Point 3

$i+=2$   
 $i=i+2$   
 $i=3+2$   
 $i=5$   
 $i+=2$   
 $i=i+2$   
 $i=5+2$   
 $i=7$

$5 < 10$  True

Point 5

$7 < 10$  True

Point 7

$i+=2$   
 $i=i+2$   
 $i=7+2$   
 $i=9$

$9 < 10$  True:

Point 9

$i+=2$   
 $i=i+2$   
 $i=9+2$   
 $i=11$

$11 < 10$  FALSE.

O/p: 13579

. . . 15

for (int i=1; i<10; i\*=2) {  
 cout << i;  
}  
op: 1248

for (int i=5; i>=1; i--) {  
 cout << i;  
}  
op: 54321

for (int i=1; i<5; ) {  
 cout << i;  
}  
1 1 1 1 1 1 1  
(infinite times)

for (int i=1; i<5; ) {  
 cout << i;  
 i++;  
}  
op: 1234

for (int i=1; i<5) {

```

for (int i=1; i<5 ) {
    cout << i;
}

```

→ ERROR

```

int i = 2;
for ( ; i<5; i++) {
    cout << i;
}

```

O/p: 2 3 4

```

for ( i=2; i<5 && i%2==0; i++) {
    cout << i;
}

```

}

$i=2$ :

$i < 5$ and $i \% 2 == 0$	Print 2	$i++$
$2 < 5$		$i = 3$
True $\&\&$ $2 \% 2 == 0$		
True $\&\&$ True		
True		

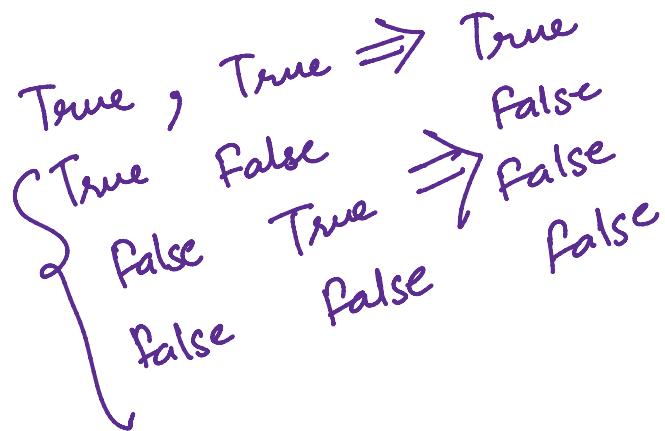
$i=3$ :

$i < 5$ and $i \% 2 == 0$		
$3 < 5$	$3 \% 2 == 0$	
True $\&\&$	False	
False		

O/p: 2

False  $\Leftarrow$  O/p: 2

AND:



for (int i=2; i < 5 || i%2 == 0 ; i++) {  
 cout << i;

}

i = 2:     $i < 5 \text{ || } i \% 2 == 0$   
                 $2 < 5 \text{ || } 2 \% 2 == 0$   
                True || True  
                True

Point 2

i++  
i = 3

$3 < 5 \text{ || } 3 \% 2 == 0$   
True || False  
True

Point 3

i++  
i = 4

$4 < 5 \text{ || } 4 \% 2 == 0$   
True || True

Point 4

i++  
i = 5

True || True

True

$$5 < 5 \quad || \quad 5 \% 2 == 0$$

False || False

False

Print ✓

EXIT

O/p: 234

OR:

True      True  
True      False  
False      True

}  $\Rightarrow$  True ✓

False      False  $\Rightarrow$  False.

(3 < 5)  
True

||

(3 \% 2 == 0)  
False

Break: exit from a loop or switch case.

```
for (int i=1; i<=10; i++) {
```

→ cout << i;

```
if (i % 3 == 0) {  
    break;
```

}

→ cout << i;

→ {  
cout << i;

{

i = 1 :    i <= 10    TRUE

Print 1

if ( $1 \% 3 == 0$ ) → False

Print 1

i++

i = 2 :    2 <= 10    TRUE

Print 2  
if ( $2 \% 3 == 0$ ) → False

Print 2

i++  
i = 3

i = 3 :    3 <= 10    TRUE

Print 3  
if ( $3 \% 3 == 0$ ) → True

break;    EXIT

Op: 1 1 2 2 3

CONTINUE:    Skip the remaining part of loop.

```
for (int i = 1; i < 5; i++) {  
    cout << i;  
    if (i % 2 == 0) {
```

```

    if ( $i \% 2 == 0$ ) {
        continue;
    }
    cout << i;
}

```

$i = 1$ :

$i < 5$   
True

Print 1  
if ( $1 \% 2 == 0$ )  $\rightarrow$  False  
Print ]

$i++$   
 $i = 2$

$2 < 5$   
True

Print 2  
if ( $2 \% 2 == 0$ )  $\rightarrow$  True  
continue

$i++$   
 $i = 3$

$3 < 5$   
True

Print 3  
if ( $3 \% 2 == 0$ )  $\rightarrow$  False  
Print 3

$i++$   
 $i = 4$

$4 < 5$   
True

Print 4  
if ( $4 \% 2 == 0$ )  $\rightarrow$  True  
continue

$i++$   
 $i = 5$

$5 < 5$   
False

EXIT

False EXIT

O/P: 1 1 2 3 3 4 .

"Return" → functions.  
Finish the function

↙ int main ( ) {

    , return 0;

main () {     → 3

    for ( int i=1; i<5; i++ ) {  
        return 0;

    }     3

    i=1     i < 5 True     return 0 .

== main function  
is over.

Nested for Loop.

~     . . . . . . . . . 1 5

```

for (int i=1; i<3; i++) {
    for (int j=1; j<3; j++) {
        cout << i << " " << j << endl;
    }
}

```

i = 1    i < 3 True

j = 1    j < 3  
i < 3 true

Print 1 1

j ++

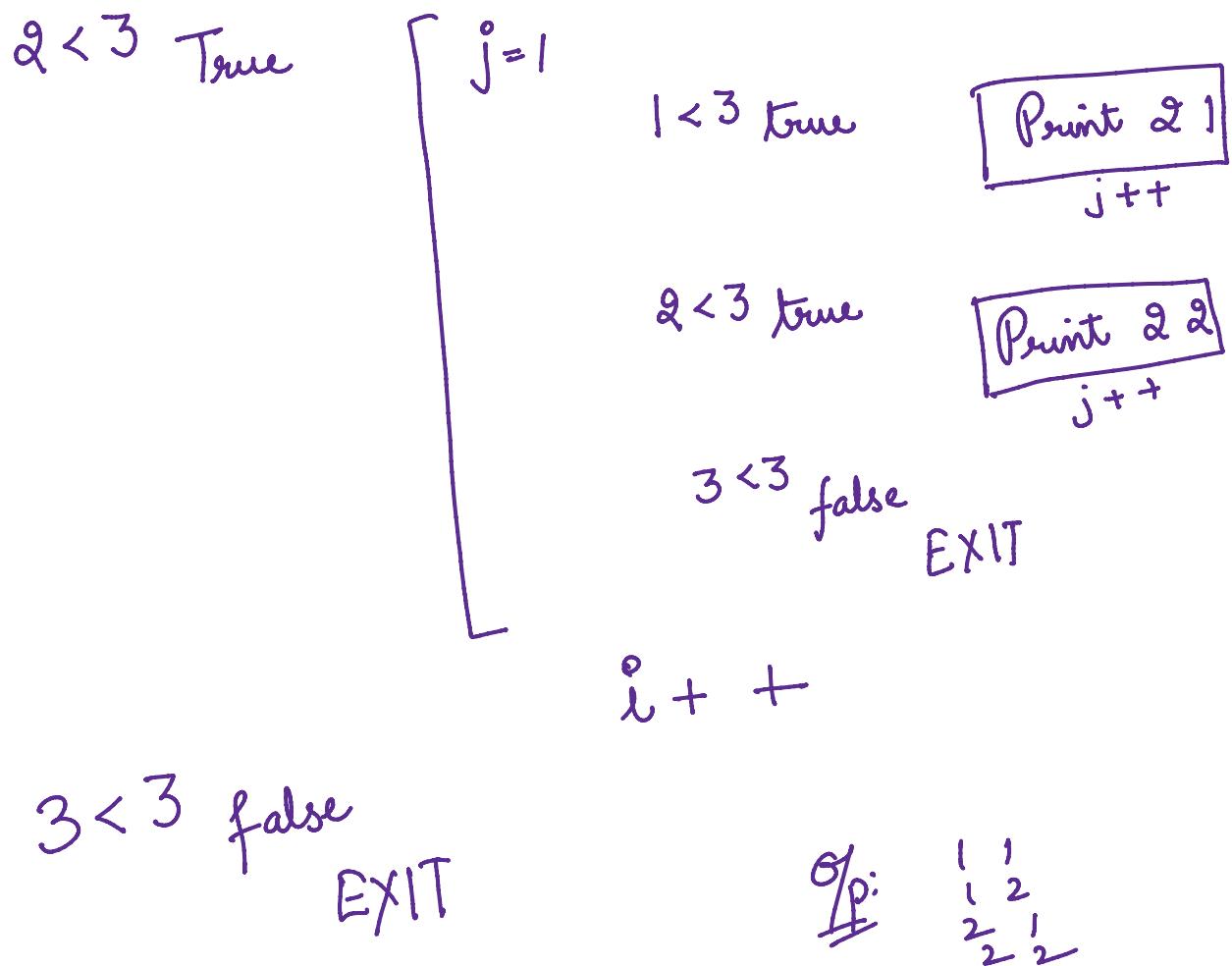
2 < 3 true

Print 1 2

j ++

3 < 3 false    EXITS

i ++



```

#include<iostream> //Header File
using namespace std;
int main(){ //Start of the main function
  for(int i=1;i<3;i++){
    for(int j=5;j<7;j++){
      cout<<i<<" "<<j<<endl;
    }
  }
}
  
```

O/P:  
 1 5  
 1 6  
 2 5  
 2 6